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Handbook for Inspection of the Condition of Food Containers

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

APPENDIX B -- USE OF RANDOM INSPECTION NUMBERS

HANDBOOK FOR INSPECTION OF THE CONDITION OF FOOD CONTAINERS

I. INTRODUCTION

The handbook provides instructions for food commodity graders and inspectors in applying the U.S. Standards for Condition of Food Containers. The Standards cover procedures for stationary lot, skip lot, and on-line sampling and inspection. Note that internal container defects are excluded from the Standards. The U.S. Standards for Condition of Food Containers, as supplemented by this handbook and specific instructions from the respective acceptance activity, will be used when a government agency or private user of the Government's food acceptance service requests verbally or in writing that the exterior of food containers be visually examined for condition. The request may be in any one of several forms--from a specific request for their use such as might be contained in a U.S. Department of Agriculture purchase document to a general request for verification that a food product was packaged in accordance with "good commercial practices." The Standards apply to all types of food containers which are used as primary containers, secondary containers, or shipping cases.

The U.S. Standards for Condition of Food Containers includes definitions of terms, sampling plans, defect classifications, acceptance criteria, and operating characteristic curves--together with considerable explanation as to their application. There are, however, administrative details of their application that are not fully covered by the Standards. This handbook provides these additional instructions and guidelines to assure more uniform application of the Standards. In this connection, however, the respective commodity acceptance services may find it appropriate to issue further supplemental instructions that may be peculiar to that commodity or which are not fully covered either by the Standards or this handbook. All such instructions will be based on principles laid down in this handbook. However, since the Standards only pertain to external container defects, respective inspection services may find it necessary to issue specific instructions regarding examination for internal container defects.

Within some acceptance services, the terms "inspection" and "grading" are used synonomously with "acceptance service", and the terms "inspector" and "grader" are also used synonomously to refer to the personnel that conduct this service. However, in order to avoid excessive wordage in the remaining portions of this handbook, the words "inspection" and "inspector" will generally be used.

This handbook is prepared in a manner to lend maximum assistance to inspectors. In accomplishing this objective, the procedures follow in a sequence that would fit most situations--starting with the inspection request and continuing through to a decision as to whether the lot meets or fails to meet the requirements of the Standards.

The handbook contains some material not directly related to the Standards. Such material has been included to further aid inspectors in a better understanding of the principles involved in determining the condition of food containers.

Also available for use in determining the condition of food containers are the following:

Visual Aids for Inspection of Metal Containers
Visual Aids for Inspection of Rigid and Semirigid Containers
Visual Aids for Inspection of Glass Containers
Visual Aids for Inspection of Flexible Containers

II. INSPECTION PROCEDURE

The Standards cover stationary lot, skip lot, and on-line sampling and inspection procedures. See § 42.103 of the Standards for stationary lot, § 42.120 for skip lot, and § 42.130 for on-line sampling and inspection procedures.

A. Application for Inspection Service

Requests for inspection are generally directed to the appropriate inspection office by letter, wire, or telephone. In some instances the inspector may be at the plant or warehouse on a sampling job and is asked to check additional lots, or the inspection office may receive a copy of the contract from a food procuring agency, contact the vendor, and arrange for inspection.

Details regarding inspection should be recorded on worksheets (Forms AD-741, AD-748, AD-749, AD-1023, AD-1027, AD-1028, AD-1029, or a suitable application form). See Appendix A. This information then becomes a part of the inspection records.

Information generally requested and recorded is:

1. Date and hour of application.

2. Name and address of the applicant and the receiver.

3. Name of person requesting the inspection.

4. Name of the person to be informed of the results.

5. Name of the packer.

6. Name and address of the warehouse.

7. Location of the lot(s), (i.e., aisle, bay, etc.).

8. Pertinent information concerning the lot(s) such as lot number, railroad car number, contract or purchase order numbers, length of storage, shipping deadlines, etc.

9. The number, type, and size of containers, and label (if labeled).

10. Codes and the approximate number of cases of each.

11. Inspection status; i.e., initial; or if reoffered, has the lot been previously inspected? If so, by whom, what were the results, and has lot been reconditioned?

12. The basis of the inspection, i.e., Commercial Item Description, Federal specification, purchase contract, etc.

13. Deviations from the Standards, such as origin inspection AQL's other than 0.25, 1.5, and 6.5 and special defects not covered by the Standards.

14. Mutually agreed upon time to perform the inspection.

B. Applicant's Responsibility

It is the applicant's responsibility to make certain that full cooperation is given to inspectors performing the inspections. The cooperation shall include but not be limited to:

1. Arranging all containers so that they are readily accessible for sampling.

2. Providing all necessary labor and equipment for handling the product.

3. Supplying adequately lit facilities.

4. Recasing of product involved in the inspection.

C. Inspection

1. Preparation

A few minutes spent in studying the inspection request, the contract, and other pertinent documents as well as assembling working tools will prevent delays and errors in handling the assignment. Many food packers work on close delivery schedules, and timing can be an important consideration. Therefore, it is necessary that the inspector arrive on time, and if a delay in arrival is anticipated, the applicant should be notified.

The inspector should be briefed by his supervisor on any abnormal conditions likely to be encountered and any unusual precautions that should be taken in handling the assignment. The supervisor should also notify the inspector if the lot is to be inspected under procedures for normal, tightened, or reduced inspection.

2. <u>Materials and Equipment</u>

    Prior to performing the condition inspection, the inspector should
    determine that necessary materials and equipment, as applicable,
    are available and in good working condition. Necessary material
    and equipment are as follows:

    a. A copy of the U.S. Standards for Condition of Food Containers.
    b. A copy of this handbook.
    c. Visual aids for the containers being inspected.
    d. Worksheets for recording defects.
    e. Flashlight or auxiliary lighting.
    f. Tools for opening shipping containers (knife, wire cutters,
        etc.).
    g. Clean hand towels or other similar material.
    h. Acceptance or certification stamps (when required).
    i. Marking pen or pencil.
    j. Cold weather gear (for freezer work).
    k. Measuring device (such as a ruler).

3. <u>Initial Contact</u>

    Upon arrival at the plant or warehouse, the inspector should con-
    tact the appropriate responsible person, state one's identity as an
    inspector, and review the purpose of the visit. Any undue delay in
    performing the inspection shall be reported to the inspector's
    supervisor.

4. <u>Lot Identity</u>

    Inspection lots must be properly identified so that the inspector
    can properly carry out inspection responsibilities. Reasons for
    such identification follow:

    a. Examined containers can be verified to be the same as reported
        by the applicant.
    b. Lots inspected can be associated with related reports and
        certificates.
    c. Subsequent inspections (if requested) of reconditioned or
        reworked lots can be differentiated from originally inspected
        lots.

    Inspection lots shall be identified by commodity (type and style),
    number, size, and type of container such as the following:

    a. Code or other identification marks.
    b. Label and case marks.
    c. Warehouse receipt or lot number.
    d. Warehouse location, including room, stack or row, aisle number
        or letter, and proximity to a permanent object such as door,
        wall, window, or office.

5. **Preliminary Inspection (Scanning)**

After the lot has been properly identified, the inspector should approximate the count in each lot to verify the reported count. While scanning the lot, determine if any segments or portions appear abnormal with respect to sweating cans, wet cases, blown cans, top layer rust, leakers, critical abnormalities, etc. If such segments or portions are noted, the lot should be rejected for condition of container.

If the lot is rejected prior to sampling, it cannot be subsequently inspected until the lot has been reconditioned. If no abnormal portions are observed, samples may be drawn to determine condition.

6. **Sampling Procedure**

a. **Sample Size**

From previous inspection records on worksheet (Form AD-749), see page 17, determine inspection status, that is, normal, tightened, or reduced. If no inspection records are available, use normal inspection. However, if the inspection is a re-inspection of a previously rejected lot that has been reconditioned, tightened inspection shall be used in all instances. Determine the number of primary containers in the lot. Locate in the Standards (Sections 42.109, through 42.111) the approximate lot size in Table I or IA for normal inspection, II or IIA for tightened inspection, or III or IIIA for reduced inspection. Select the proper sample size corresponding to the appropriate lot size. A larger sample size may be used when approved by the Administrator or when requested by the applicant and approved by the Administrator.

b. **Drawing Sample**

As indicated in the Standards, containers may be drawn either according to proportional random sampling or according to simple random sampling. If the number of containers per code mark is known, proportional sampling is preferred. Regardless of the procedure followed, samples must be representative of all portions of the lot. (See Appendix B for a discussion on the use of random inspection numbers.) This will generally require a complete breakdown of the lot in order that all portions are accessible for sampling.

Situations arise in which the accessibility of some portions of a lot is severely limited. In these circumstances, examination is restricted to a sample drawn from the accessible portion of the lot.

The size of the restricted sample is based on the number of containers available for examination. A certificate for this type of examination should (1) indicate that restricted sampling was performed and (2) specifically identify the accessible portions. An example of such a statement is: "Inspection and certificate restricted to pallets labeled __ through __." Wording of the restriction statement must be specific so that there can be no misunderstanding as to what portion of the lot the certificate covers.

Restricted sampling and the issuance of restricted certificates are undesirable practices and should be kept to a minimum. See Case 3 in Section III of Appendix B for an example of restricted sampling.

Predetermine the containers or cases from which containers will be drawn and identify them. The predetermined plan for selecting samples will be such that all horizontal and vertical layers in a stack will have an equal chance of being represented. If the containers are cased, predetermine how many to draw from each case selected and which containers to select. Examine no more than the maximum number of samples permitted in § 42.105(e) of the Standards. These predetermined plans for selecting cases and containers will eliminate bias due to accessibility of containers and readily visible defects.

There may be instances in which a defective container that falls outside the predetermined sampling pattern will be noted. This container must not be purposely selected just because it is defective. It should be drawn only if it falls in the predetermined pattern; nevertheless, the inspector should recommend that obviously defective units that are noticed be removed from the lot and be replaced. This recommendation should be made also for any defective container appearing in the sample even though the lot is acceptable. There will also be instances in which it will be obvious that defective containers will be localized. For example, the entire top layer of a stack may contain rusted cans, or the front of a stack may show extensive damage due to fork lift equipment, or the bottom layer may have been standing in water. In these instances, identify the sample units with the respective portions of the lot to properly inform the applicant of the condition if reconditioning is in order.

The recommended sampling plans in Tables IA, IIA, and IIIA of the Standards are double plans. Double sampling plans provide for the examination of two samples (a first sample and a second sample) with acceptance and rejection criteria indicated for the first and the total sample. The first sample must be

examined first and a decision made to accept, reject, or con-
tinue the inspection by drawing and examining the second
sample. Ordinarily, the second would not be drawn unless the
lot could not be accepted or rejected based on the results of
examining the first sample. However, there may be circumstan-
ces in which it would be desirable to draw both the first and
second samples on the initial sampling of the lot. In such
instances, the examination of the second sample should be held
in abeyance pending the outcome of the examination of the first
sample.

7. Classifying and Recording Defects

Each sample container shall be examined carefully under adequate
natural and/or artificial lighting to insure that all defects are
noted. Inspection should not be conducted until adequate lighting
is supplied. The inspector may refuse inspection for condition of
containers until such lighting is provided. Reference should be
made to the appropriate visual aids for inspecting the different
kinds of containers to assist in the proper classification of the
defects. Care should be taken to distinguish between "related"
and "unrelated" defects--only the most serious "related" defect is
recorded. Also, it is possible that defects may be present which
are not categorized within the Standards. In this event, these
shall be classified according to their severity. In addition,
purchase specifications may require that containers be examined for
additional defects that are not classified in the Standards. In
this event, these defects must be recorded, if present, and results
incorporated into the acceptance and rejection criteria. Such
defects shall be specified on worksheets in the "other" or blank
block.

Each defect shown in Tables IV, V, VI, VII, and VIII in Sections
42.112 and 42.113 of the Standards is serially numbered according
to the applicable defect category as follows: Critical 1, 2, 3,
etc.; Major 101, 102, 103, etc.; and Minor 201, 202, 203, etc.

Record the number and type of defects on the worksheet (Form
AD-741, AD-748, AD-749, AD-1023, AD-1027, AD-1028, AD-1029, see
Appendix A, or other forms as approved by the Administrator), using
the appropriate columns to identify each category of defect -
namely critical, major, or minor. If a second sample is required
to classify the lot, record each set of samples so they can be
separately identified on the worksheet. Total the number of
defects in each of the above categories.

8. Lot Acceptance Criteria

a. Stationary Lot

The acceptability of stationary lots is determined by referring to the table of sampling plans used. For a given sample size, acceptance and rejection numbers are provided for <u>critical</u>, <u>major</u>, and <u>total</u> defects. Total defects include not only critical and major defects, but also minor defects.

Unless otherwise specified, AQL's for origin inspection shall be 0.25, 1.5, and 6.5 for critical, major, and total defects, respectively.

Refer to the appropriate acceptance (Ac) and rejection (Re) numbers for the first sample:

1. If the sum of the critical, major, or total defects does not exceed "Ac", the lot is considered acceptable. (The acceptance number does not represent the number of defects that the sample should contain, but rather is the maximum number of defects permitted in a sample in order to consider a lot as meeting a specific requirement.)

2. If the sum of the critical, major, or total defects equals or exceeds "Re", the lot fails.

3. If the sum of the critical, major, or total defects exceeds "Ac", but is less than "Re", the second sample is evaluated; the sum of each class of defects in the combined sample is compared with the acceptance and rejection numbers in the table for each AQL, and a positive decision is made to either accept or fail the lot.

Stationary lot example -- A lot contains 2,000 cases of 24 No. 2-1/2 cans each or 48,000 containers. The lot is to be inspected under normal inspection procedures. Sampling plan code CD in Table I-A of the Standards is applicable for lots over 36,000 containers. A sample of 228 containers is examined as is indicated under "Sample Size" opposite code CD for the first sample size. This sample contained 15 minor, 4 major, and no critical defects for a total of 19 defects. The lot can neither be accepted nor rejected on this sample for major or total defects because the 4 major defects are between the Ac = 3 and Re = 9 for AQL = 1.5, and 19 total defects are between Ac = 15 and Re = 24 for AQL = 6.5. Therefore, a second sample of 288 containers is examined, and the additional critical, major, and minor defects found are added to those defects found in the first sample. Suppose the total defects found in the 516 sample units equal 33 minor, 9 major, and 1 critical

for a total of 43 defects. The 1 critical, 9 major, and 43
total defects are all equal to or less than the acceptance (Ac)
numbers of 3, 12, and 43; therefore, the lot is accepted.
However, had the number of defects for any of the classes
exceeded the applicable acceptance number, the lot would fail
the condition of container requirements.

b. On-line Lot

The acceptability of a portion of production is determined by
comparing the calculated CuSum value with the acceptance limit
"L" for the specified AQL.

Unless otherwise specified, AQL's for origin inspection shall
be 0.25, 1.5, and 6.5 for critical, major, and total defects,
respectively.

Refer to the appropriate "L" values for the appropriate AQL in
§ 42.132 of the Standards.

1. A portion of production is acceptable if the CuSum value,
calculated from the subgroup representing that portion, is
equal to or less than the "L" value for all classes of
defects.

2. A portion of production is rejected if the CuSum value,
calculated from the subgroup representing that portion,
exceeds the "L" value for one or more classes of defects.

On-line lot example -- A lot, portion of production, contains
2,820 cases of 24 No. 303 cans each or 67,680 containers. (See
page 18, Appendix A, Exhibit 6.) The lot is to be inspected
under normal inspection procedures. A sample unit of 25 con-
tainers is examined as indicated under "Type of Inspection and
Number of Sample Units" in the Standards. At least 6 subgroups
must be obtained during each basic inspection period. The
subgroup examined at 8:30 a.m. contained no critical, major, or
total defects. However, the critical subgroup tolerance "T"
value of 0.05 is subtracted from the critical subgroup "S"
starting value of 0.35 for a calculated value of 0.30. Similar
determinations are made for major and total defect categories.

The subgroup examined at 1305, or 1:05 p.m., shows a value of
zero for critical defects. Note that the CuSum value is reset
to zero when the calculated CuSum value is less than zero
(Previous CuSum value of zero minus the "T" value of 0.05 is
reset to zero). Also note that the 4 minor defects are added
to the previous minor CuSum value of 3 for a total of 7 minus
the "T" value of 2 equals a total of 5, which exceeds the "L"
value of 3, thus causing the subgroup to fail condition of

container requirements. Finally, note that the calculated CuSum value of 5 is reset to 3 (depicted by a circle) due to the calculated CuSum value exceeding the "L" value.

The subgroup failing condition of container requirements may be reconditioned or reworked and offered as a stationary lot under Other Than Origin Inspection AQL's, (see III. OTHER THAN ORIGIN INSPECTION AQL'S, below). Remaining subgroups which do not exceed "L" values for critical, major, and total classes of defects meet condition of container requirements.

III. OTHER THAN ORIGIN INSPECTION AQL'S

Other Than Origin Inspection AQL's are applicable when performing a reinspection of a reconditioned lot or when specifically requested by a financially-interested party.

When the inspector performs a reinspection, the procedure for applying Other Than Origin Inspection AQL's is as follows:

The defective portion of the lot should be segregated before the remaining portion of the lot is offered for reinspection. Subsequently, the defective portion may be reconditioned or reworked and offered as a "new" lot for inspection. Whenever the inspector is requested to perform a reinspection, the applicable sampling plan for tightened inspection shall be used.

Unless otherwise specified by the purchaser, the AQL's used for respective classes of defects shall be those contained in Lot Acceptance Criteria § 42.107(b), which are 0.25 for critical, 2.5 for major, and 10.0 for total.

IV. CERTIFICATION

The type of report or certification with respect to condition of container will depend to a great extent upon the requirements of the purchase specification and the wishes of the applicant. However, there are certain guidelines or principles than can be followed under the various circumstances. These principles are as follows:

Government Agencies

1. If condition of container inspection is specifically cited to be in accordance with the U.S. Standards for Condition of Food Containers, or if the agency requests certification that the container was packaged under "good commercial practices":

Example 1 (Lot Meets)

Condition of containers - Meets applicable U.S. Standards for
Condition of Food Containers.

Example 2 (Lot Fails)

Condition of containers - Fails applicable U.S. Standards for
Condition of Food Containers.

2. If the agency requests a detailed breakdown of defects on failed lots,
insert a heading for condition of container in the body of the certifi-
cate and enumerate defects as follows:

Example 3 (Lot Condition of Container Fails)

In the Body:

Condition of containers - Defects noted in a sample of 96 cans include
18 major rust, 3 major buckled, and 9 major dents.

**NOTE: Ordinarily the purchasing agency would not request this detail
at time of origin inspection, as the supplier would be obligated to
replace failed lots with acceptable deliveries.**

Commercial Inspections

1. Condition of container specifically requested by applicant: In this
instance, include a heading in the body of the certificate for condition
of container.

Example 4 (Lot Meets)

In the Body:

Condition of containers - Meets applicable U.S. Standards for
Condition of Food Containers.

Example 5 (Lot Fails)

In the Body:

Condition of containers - Fails applicable U.S. Standards for
Condition of Food Containers. If the applicant desires a detailed
breakdown of defects, report as in Example 3.

2. Condition of container examination not requested by applicant: In this
instance, do not check the lot according to the formal plan, but at the
same time do not overlook a bad condition. In the case of obviously

good lots, do not mention container condition. In the case of obviously bad lots, contact the applicant and recommend that the bad condition be corrected. If he wishes to continue with the inspection without correcting the bad condition, perform the inspection and flag the certificate according to the nature of the container deviation.

Example 6 (Lot apparently satisfactory)

Do not refer to condition of container either in the body, the grade statement, or under remarks.

Example 7 (Lot obviously defective)

Include a statement on the certificate as follows: "This certificate covers 2,000 cases of 24 No. 303 cans packed in unsealed corrugated fiberboard cases. Visual observation of lot indicates top layer of stack contains large number of seriously rusted containers.".

U. S. DEPARTMENT OF AGRICULTURE

CONTAINER EXAMINATION WORKSHEET
(TABLE IV – METAL CONTAINERS)

NAME AND ADDRESS OF APPLICANT

Pien Pack Foods, Inc.
El Producto, Md.

PRODUCT	TYPE AND SIZE OF CONTAINERS
Frozen Peaches	8-1/4 pound cans

LOT NO.	LOT SIZE*	CONTRACT NO.
8	10,912	DSA 137-86-C-PA94

INSPECTION STATUS OF LOT*: [X] ORIGINAL [ ] RESUBMITTED
INSPECTION POINT: Landover, Md.

CODES AND APPROXIMATE NO. OF CONTAINERS PER CODE* 2000 cans Q2431
3000 each Q2441, Q2451, and Q2461

*As stated by applicant.

> Describe type and size of containers examined. Can be primary and/or secondary.

> List only primary containers if they are examined. Otherwise, specify number of secondary containers.

SAMPLING PLAN USED

[X] NORMAL [ ] TIGHTENED [ ] REDUCED

CODE CB

> The sampling plan and its code as it appears in the Standards.

Destination AQL's

> If other than origin AQL's are used, they must be specified.

	NO. OF SAMPLE UNITS	CRITICAL AQL: 0.25		MAJOR AQL: 2.5		TOTAL (Minor, critical, and major defects) AQL: 10.0	
		Ac	Re	Ac	Re	Ac	Re
First sample	120	0	2	3	7	14	19
Second sample	60						
Total sample	180	1	2	8	9	25	26

DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE	DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE
	Type or size of container or component parts not as specified	NONE PERMITTED		108	RUST (continued): (b) Rust stain (military purchases)	MAJOR	
101	Closure incomplete, not located correctly or not sealed, crimped, or fitted properly	MAJOR		109	(c) Pitted rust	MAJOR	
201	Dirty, stained or smeared container	minor		207	Wet cans (excluding refrigerated containers)	minor	
102	KEY OPENING METAL CONTAINERS (when req.): (a) Key missing	MAJOR		208	DENT (a) Materially affecting appearance but not usability	minor	
103	(b) Key does not fit tab	MAJOR		110	(b) Materially affecting usability	MAJOR	
104	(c) Tab of opening band insufficient to provide accessibility to key	MAJOR		209	BUCKLE (a) Not involving end seam	1111	111
105	(d) Improper scoring (band would not be removed in one continuous strip)	MAJOR		111	(b) Extending into the end seam	MAJOR 1	1111 1
106	OPEN TOP WITH PLASTIC OVERCAP (when req.): (a) Plastic overcap missing	MAJOR		112	Collapsed container	MAJOR	
107	(b) Plastic overcap warped (making opening or reapplication difficult)	MAJOR		210	Paneled side materially affecting appearance but not usability	minor	
202	OUTSIDE TINPLATE OR COATING (when req.): (a) Missing or incomplete	minor		113	Solder missing when required	MAJOR	
203	(b) Blistered, flaked, sagged, or wrinkled	minor		114	Cable cut exposing seam	MAJOR	
204	(c) Scratched or scored	minor		115	Improper side seam	MAJOR	
205	(d) Fine cracks	minor		1	Swell, springer, or flipper (not applicable to gas or pressure packed product nor frozen products)	CRITICAL	
	RUST: (rust stain confined to the top or bottom double seam or rust that can be removed with a soft cloth is not scored as a defect)	minor		2	Leaker or blown container	CRITICAL	1
				211	FROZEN PRODUCTS ONLY: (a) Bulging ends 3/16" to 1/4" beyond lip	minor 1111 1111 11	1111 11
206	(a) Rust stain (nonmilitary purchases)			116	(b) Bulging ends more than 1/4" beyond lip	MAJOR	

	TABLE VIII – LABEL, MARKING, OR CODE						
101	Not specified method	MAJOR		202	Torn or mutilated	minor	
102	Missing (when required)	MAJOR		203	Text illegible or incomplete	minor	
103	Text illegible or incomplete (military purchases)	MAJOR		204	In wrong location	minor	
104	Incorrect	MAJOR			OTHER (Specify)		
201	Loose or improperly applied	minor					

> Specify defect and its severity if not categorized in the Standards.

> List the number of defects found in all samples. If second sample used, total all defects from first and second samples.

	MINOR	MAJOR	CRITICAL	TOTAL
First sample	17	1	0	18
Second sample	10	6	1	17
Grand total	27	7	1	35

ACTION TAKEN BASED ON FIRST SAMPLE
[ ] LOT ACCEPTED [ ] LOT REJECTED [X] SECOND SAMPLE NEEDED

ACTION TAKEN ON SECOND SAMPLE (if required)
[ ] LOT ACCEPTED [X] LOT REJECTED

DATE INSPECTED: 5/13/86

SIGNATURE OF INSPECTOR: John N. Jones

FORM AD-748 (5-85) (Edition of 3-79 may be used)   (Over)

TABLE VI – RIGID AND SEMIRIGID CONTAINERS – CORRUGATED OR SOLID FIBERBOARD, CHIPBOARD, WOOD, ETC. (EXCLUDING GLASS AND METAL)

NAME AND ADDRESS OF APPLICANT

Milky Way Dairy Co.
Azusa, Calif.

PRODUCT	TYPE AND SIZE OF CONTAINERS
Butter	1# Kraft cartons

LOT NO.	LOT SIZE*	CONTRACT NO.
12	284,256	C-51-01723

INSPECTION STATUS OF LOT*: [X] ORIGINAL [ ] RESUBMITTED
INSPECTION POINT: Northwood, Calif.

CODES AND APPROXIMATE NO. OF CONTAINERS PER CODE*
200,000 EFSQC CY3W   40,000 each EXSQB CY3W   EDRQB CY3W

*As stated by applicant

> Describe type and size of containers examined. Can be primary and/or secondary.

> List only primary containers if they are examined. Otherwise, specify number of secondary containers.

SAMPLING PLAN USED

[X] NORMAL [ ] TIGHTENED [ ] REDUCED   CODE CD

> The sampling plan and its code as it appears in the Standards.

> If other than origin AQL's are used, they must be specified.

	NO. OF SAMPLE UNITS	CRITICAL AQL: 0.25		MAJOR AQL: 1.5		TOTAL (Minor, critical, and major defects) AQL: 6.5	
		If other, specify____		If other, specify____		If other, specify____	
		Ac	Re	Ac	Re	Ac	Re
First sample	228	0	3	3	9	15	24
Second sample	288						
Total sample	516	3	4	12	13	43	44

DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE	DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE
	Type or size of container or component parts not as specified	NONE PERMITTED			SEPARATION OF LAMINATION (continued)	MAJOR	
				105	(b) Materially affecting usability		
101	Component part missing	MAJOR		106	Product sifting or leaking	MAJOR	
102	CLOSURE NOT SEALED, CRIMPED, OR FITTED PROPERLY (a) Primary container	MAJOR /		206	NAILS OR STAPLES (when required) (a) Not as required, insufficient number or improperly positioned	minor	
201	(b) Other than primary container	minor		107	(b) Nails or staples protruding	MAJOR	
202	Dirty, stained, or smeared container	minor /			GLUE OR ADHESIVE (when required); NOT HOLDING PROPERLY, NOT COVERING AREA SPECIFIED, OR NOT COVERING SUFFICIENT AREA TO HOLD PROPERLY.	MAJOR	
203	WET OR DAMP (excluding ice pack) (a) Materially affecting appearance but not usability	minor		108	(a) Primary container		
103	(b) Materially affecting usability	MAJOR		207	(b) Other than primary container	minor	
1	Moldy area	CRITICAL		208	FLAP: (a) Projects beyond edge of container more than ¼ inch	minor	
204	CRUSHED OR TORN AREA. (a) Materially affecting appearance but not usability	minor		209	(b) Does not meet properly, allowing space of more than ¼ inch	minor	
104	(b) Materially affecting usability	MAJOR		109	SEALING TAPE OR STRAPPING (when required): (a) Missing	MAJOR	
205	SEPARATION OF LAMINATION (corrugated fiberboard). (a) Materially affecting appearance but not usability	minor		210	(b) Improperly placed or applied	minor	

TABLE VIII – LABEL, MARKING, OR CODE

DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE	DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE
101	Not specified method	MAJOR		202	Torn or mutilated	minor	
102	Missing (when required)	MAJOR /		303	Test illegible or incomplete	minor ЦН I	
103	Test illegible or incomplete (military purchases)	MAJOR		204	In wrong location	minor	
104	Incorrect	MAJOR			OTHER (Specify)		
201	Loose or improperly applied	minor					

> Specify defect and its severity if not categorized in the Standards.

	MINOR	MAJOR	CRITICAL	TOTAL	ACTION TAKEN BASED ON FIRST SAMPLE
First sample	7	2	0	9	[X] LOT ACCEPTED [ ] LOT REJECTED [ ] SECOND SAMPLE NEEDED
Second sample					ACTION TAKEN ON SECOND SAMPLE (If required)
Grand total					[ ] LOT ACCEPTED [ ] LOT REJECTED

> List the number of defects found in all samples. If only the first sample is used, do not fill in for grand total.

DATE INSPECTED: 5/9/86

SIGNATURE OF INSPECTOR: *Sam Peterson*

FORM AD-748 (Reverse)

U S DEPARTMENT OF AGRICULTURE
CONTAINER EXAMINATION WORKSHEET
TABLE V – GLASS CONTAINERS

NAME AND ADDRESS OF APPLICANT

Tom Thumb, Inc.
Little Rock, Arkansas

PRODUCT: GRAPE JELLY
TYPE AND SIZE OF CONTAINERS: 12/2 lb. jars
LOT NO.: 7
LOT SIZE*: 13,461
CONTRACT NO.: DSA 137-86-C-4069
INSPECTION STATUS OF LOT*: [X] ORIGINAL [ ] RESUBMITTED
INSPECTION POINT: Pine Bluff, Arkansas
CODES AND APPROXIMATE NO. OF CONTAINERS PER CODE*
10,000 W3QA   3,500 W3PR
*As stated by applicant

> Describe type and size of containers. Can be primary and/or secondary.

> List only primary containers if they are examined. Otherwise, specify number of secondary containers.

> The sampling plan and its code as it appears in the Standards.

> If other than origin AQL's are used, they must be specified.

SAMPLING PLAN USED: [X] NORMAL [ ] TIGHTENED [ ] REDUCED   CODE CC

	NO. OF SAMPLE UNITS	CRITICAL AQL 0.75		MAJOR AQL 1.5		TOTAL (Minor, critical, and major defects) AQL 6.5	
		If other, specify		If other, specify		If other, specify	
		Ac	Re	Ac	Re	Ac	Re
First sample	168	0	3	2	7	12	18
Second sample	180						
Total sample	348	2	3	9	10	31	32

DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE	DEFECT NO.	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE
	Type or size of container or component parts not as specified	NONE PERMITTED		1	Bird swing (glass appendage inside container)	CRITICAL	
101	Closure not sealed, crimped, or fitted properly	MAJOR		2	Broken or leaking container	CRITICAL	
201	Dirty, stained, or smeared container	minor		207	CAP (nonheat processed) (a) Cross-threaded	minor	
202	Chip in glass	minor ЦЖ 1		208	(b) Loose but not leaking	minor	
203	Stone (unmelted material) in glass	minor		106	(c) Pitted rust	MAJOR	
204	Pits in surface of glass	minor		3	CAP (heat processed) (a) Cross-threaded or loose	CRITICAL	
205	Sagging surface	minor		107	(b) Pitted rust	MAJOR	
206	BEAD (bubble within glass) (a) 1/8" to 1/16" in diameter	minor			SEALING TAPE OR CELLO BAND (when required)	minor	
102	(b) Exceeding 1/8" in diameter	MAJOR		209	(a) Improperly placed		
103	Checked	MAJOR		108	(b) Not covering juncture of cap and glass	MAJOR	
104	Thin spot in glass	MAJOR /		109	(c) Ends overlap by less than ½"	MAJOR	
105	Blister (structural defect)	MAJOR		110	(d) Loose or deteriorating	MAJOR	

TABLE VIII – LABEL, MARKING, OR CODE

DEFECT NO.	TYPE OF DEFECT			DEFECT NO.	TYPE OF DEFECT		
101	Not specified method	MAJOR		202	Torn or mutilated	minor	
102	Missing (when required)	MAJOR		203	Text illegible or incomplete	minor	
103	Text illegible or incomplete (military purchases)	MAJOR		204	In wrong location	minor	
104	Incorrect	MAJOR			OTHER (Specify)		
201	Loose or improperly applied	minor					

> Specify defect and its severity if not categorized in the Standards.

> List the number of defects found in all samples. If second sample used, total all defects from first and second samples.

	MINOR	MAJOR	CRITICAL	TOTAL
First sample	6	1	0	7
Second sample				
Grand total				

ACTION TAKEN BASED ON FIRST SAMPLE
[X] LOT ACCEPTED [ ] LOT REJECTED [ ] SECOND SAMPLE NEEDED

ACTION TAKEN ON SECOND SAMPLE (If required)
[ ] LOT ACCEPTED [ ] LOT REJECTED

DATE INSPECTED: 5/15/86

SIGNATURE OF INSPECTOR: Sam Mann, Jr.

FORM AD-741 (11-86)   (Edition of 5-84 may be used)   (Over)

U S DEPARTMENT OF AGRICULTURE
CONTAINER EXAMINATION WORKSHEET
TABLE VII – FLEXIBLE CONTAINERS
(Plastic, Cello, Paper, Textile, etc.)

NAME AND ADDRESS OF APPLICANT

Nebraska Consolidated Mills
Omaha, Nebraska

PRODUCT: All Purpose Flour Enriched

TYPE AND SIZE OF CONTAINERS: 50 lb, paper bags

LOT NO.	LOT SIZE*	CONTRACT NO.
8	1,600	MP(FF) 18492

INSPECTION STATUS OF LOT*: [X] ORIGINAL [ ] RESUBMITTED

INSPECTION POINT: Decatur, Alabama

CODES AND APPROXIMATE NO. OF CONTAINERS PER CODE*

1,600 car RT 42798, seals USGSA 3259 & 3260

*As stated by applicant

> Describe type and size of containers examined. Can be primary and/or secondary.

> List only primary containers if they are examined. Otherwise, specify number of secondary containers.

> If other than origin AQL's are used, they must be specified.

SAMPLING PLAN USED

[X] NORMAL [ ] TIGHTENED [ ] REDUCED   CODE CA

> The sampling plan and its code as it appears in the Standards.

	NO OF SAMPLE UNITS	CRITICAL AQL 0.25		MAJOR AQL 1.5		TOTAL (Minor, critical, and major defects) AQL 6.5	
		If other, specify Ac	Re	If other, spe if Ac	Re	If other, spe ify Ac	Re
First sample	36	0	1	0	4	2	7
Second sample	60						
Total sample	96	0	1	3	4	10	11

DEFECT NO	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE	DEFECT NO	TYPE OF DEFECT	1st SAMPLE	2d SAMPLE
	Type or size of container or component parts not as specified	NONE PERMITTED		106	WET OR DAMP (continued) (b) Materially affecting usability	MAJOR	
	CLOSURE NOT SEALED, CRIMPED, STITCHED, OR FITTED PROPERLY	MAJOR		107	OVERWRAP (when required) (a) Missing	MAJOR	
101	(a) Primary container			206	(b) Loose, not sealed or closed	minor	
201	(b) Other than primary container	minor		207	(c) Improperly applied	minor	
202	Dirty stained, or smeared container	minor			SEALING TAPE, STRAPPING OR ADHESIVES (when required)	MAJOR	
203	Unmelted gels in plastic	minor		108	(a) Missing		
	TORN CONTAINER	minor				minor	
204	(a) Materially affecting appearance but not usability	LHT I		208	(b) Improperly placed, applied, torn, or wrinkled		
102	(b) Materially affecting usability	MAJOR II			TAPE OVER BOTTOM AND TOP CLOSURES (when required)	MAJOR	
103	Product sifting or leaking	MAJOR		109	(a) Not covering stitching		
1	Moldy area	CRITICAL		110	(b) Turn exposing stitching	MAJOR	
		MAJOR		111	(c) Wrinkled exposing stitching	MAJOR	
104	Individual packages sticking together or to shipping case (tear when separated)				(d) Not adhering to bag	MAJOR	
105	Not fully covering product	MAJOR		112	1. Exposing stitching		
	WET OR DAMP (excluding ice pocket)	minor		209	2. Not exposing stitching	minor	
205	(a) Materially affecting appearance but not usability			210	(e) Improper placement	minor	

TABLE VIII – LABEL, MARKING, OR CODE

DEFECT NO	TYPE	1st	2d	DEFECT NO	TYPE	1st	2d
101	Not specified method	MAJOR		202	Torn or mutilated	minor	
102	Missing (when required)	MAJOR		203	Text illegible or incomplete	minor	
103	Text illegible or incomplete (military purchases)	MAJOR		204	In wrong location	minor	
104	Incorrect	MAJOR		OTHER (Specify)			
201	Loose or improperly applied	minor					

> Specify defect and its severity if not categorized in the Standards.

	MINOR	MAJOR	CRITICAL	TOTAL
First sample	6	2	0	8
Second sample				
Grand total				

> List the number of defects found in all samples. If second sample used, total all defects from first and second samples.

ACTION TAKEN BASED ON FIRST SAMPLE

[X] LOT ACCEPTED [ ] LOT REJECTED [ ] SECOND SAMPLE NEEDED

ACTION TAKEN ON SECOND SAMPLE (if required)

[ ] LOT ACCEPTED [ ] LOT REJECTED

DATE INSPECTED: May 1, 1986

SIGNATURE OF INSPECTOR: John M. Doe

FORM AD-1023 (11-86)

(Over)

Form AD-749 (11/77)

CUMULATIVE ORIGINAL INSPECTIONS OF CONDITION OF CONTAINER

PACKER: Fruitland Canning Company

CONTAINER: No. 10 Cans

LOCATION OF PLANT: Midtown, Iowa

AQL'S: [X] 0.25 [X] 1.5 [ ] 6.5 [ ] OTHER (Specify)

INSTRUCTIONS: Keep a separate record on inspection lots by (1) source, (2) style, (3) size, (4) type of container, and (5) specified combination of AQL's.

Do not record resubmitted lots. If double sampling plans are used, all sample units inspected will be recorded, not "first" samples only.

Date of Inspection	Normal (√)	Tightened (√)	Reduced (√)	Ac. (√)	Re. (√)	Sample Units	Critical	Major	Total	Cumulative Sample Units in Consecutive Inspections	Critical	Major	Total
1-25-85	√			√		36	0	0	2	36	0	0	2
3-10-85	√			√		96	0	2	6	132	0	2	8
3-25-85	√			√		96	0	3	3	228	0	5	11
3-30-85	√			√		180	0	2	11	408	0	7	22
4-10-85	√			√		120	0	0	6	528	0	7	28
4-15-85	√			√		120	0	1	7	648	0	8	35
5-17-85	√			√		228	0	0	10	876	0	8	45
5-28-85	√			√		168	0	1	7	1044	0	9	52
6-3-85	√			√		180	0	3	12	1224	0	12	64
7-17-85	√			√		120	0	1	8	1344	0	13	72
8-10-85										1308	0	13	70
	√			√		36	0	0	1	1344	0	13	71
8-21-85	√			√		96	0	1	4	1440	0	14	75
8-28-85										1344	0	12	69
			√	√									
9-3-85			√	√									
9-7-85			√	√									
9-21-85			√	√									
10-3-85			√	√									
10-7-85			√		√								
10-24-85	√			√		96	0	2	7	96	0	2	7
10-30-85	√				√								
11-11-85	√				√								
12-3-85		√		√									
12-15-85		√		√									
1-3-86		√		√									
1-15-86		√		√									
1-21-86		√		√									
2-3-86	√			√		120	0	1	5	120	0	1	5

Column group headers: "For acceptable lots under original normal inspection only"; "NUMBER OF DEFECTS"; "CUMULATIVE DEFECTS IN CONSECUTIVE INSPECTIONS".

Annotations:

Data cumulated for consecutive acceptable lots under original normal inspection within the last 6 months in order to determine if it meets the switching criteria in Table III-B on reverse side of form. NOTE: Data for rejected lots and for reduced and tightened inspections not recorded on form.

Cumulative defects of preceding 10 inspection lots exceed limits of Table III-B for total defects. Therefore, continue using normal inspections.

Cumulative defects of preceding 10 inspection lots within preceding 6 months are within limits of Table III-B for each class of defects. Therefore, switch to reduced inspection.

Rejection of preceding lot requires return to normal inspection.

Second rejection in last 3 consecutive normal inspections requires a shift to tightened inspection.

Return to normal inspection permitted after 5 consecutive acceptable lots using tightened inspection.

Date from inspection on 1-25-85 deleted as not within preceding 6 months.

Date from inspection on 3-10-85 deleted as not within preceding 10 inspection lots within preceding 6 months.

Start over recording cumulative data of acceptable lots after a rejection.

Start over recording cumulative data after return to normal inspection from tightened inspection.

HOW TO RECORD RESULTS ON FORM AD-1027 (METAL CONTAINERS)

U.S. DEPARTMENT OF AGRICULTURE TALLY SHEET FOR ON-LINE INSPECTION Table IV -- Metal Containers	Product Canned Applesauce			Type and Size of Container 24/No. 303 Cans

Name and Address of Applicant
Independent Food Proc. Corp.
Sunnyside, WA

Lot or Contract No. USDA 22189
Inspection Point Sunnyside, WA
Lot Size (container) 2,820 cases

Codes ① 2F06C ② 2G02B ③ 2G02A ④ 2G01I ⑤ 2G01J ⑥ 2G01H ⑦ 2G01F ⑧ 2G01B ⑨ 2G01F ⑩ 2F30E ⑪ 2F30F ⑫ 2F30E ⑬ 2F30D

Sampling Plan / Sample Size
☒ Normal — 25
☐ Reduced — 13
☐ Tightened — 50

PERIOD CODE/LINE NUMBER							1	2	3	4	5	6	7	8	9	10	11	12	13
TIME							0830	0905	0940	1000	1030	1055	1125	1200	1240	1305	1325	1405	1430
AQL	CAT.	DEF NO.	TYPE OF DEFECT																
0.25	CRITICAL		TOTAL CRITICAL	S	T	L	0	0	0	0	0	0	0	0	0	0	0	0	0
			CUSUM Reduced	0	0	0													
			CUSUM Normal	0.35	0.05	0.95	0.30	0.25	0.20	0.15	0.10	0.05	0	0	0	0	0	0	0
			CUSUM Tightened	0.3	0.1	0.9													
	MAJOR	109	Pitted Rust											1					
1.5			TOTAL MAJOR	S	T	L	0	0	0	0	0	0	0	0	1	0	0	0	0
			CUSUM Reduced	0	0.5	0.5													
			CUSUM Normal	1	0.5	2	0	0	0	0	0	0	0	0	0.5	0	0	0	0
			CUSUM Tightened	0.4	0.8	1.6													
	MINOR	208	Dent (Materially affecting appearance, but not usability)										1	3	4	4		1	
			TOTAL MINOR				0	0	0	0	0	1	0	3	4	4	0	1	0
6.5	TOTAL		TOTAL ALL CATEGORIES	S	T	L	0	0	0	0	0	1	0	3	5	4	0	1	0
			CUSUM Reduced	1	1	2													
			CUSUM Normal	1	2	3	0	0	0	0	0	0	0	1	3	③	1	0	0
			CUSUM Tightened	1	2.5	3													

DEF. NO.	CRITICAL DEFECTS	Meets (M) or Fails (F)	M	M	M	M	M	M	M	M	M	F	M	M	M
	Type/size of container/component parts not as specified — NONE PERMITTED														
1	Swell, springer, or flipper (not applicable to gas or pressure packed product nor frozen products)														
2	Leaker or blown container														

DEF. NO.	MAJOR DEFECTS	DEF. NO.	MINOR DEFECTS
101	Closure incomplete, not located correctly/sealed/crimped/fitted properly	201	Dirty, stained, or smeared container
	Key Opening Metal Containers (when required):		Outside Tinplate or Coating (when required):
102	Key missing	202	Missing or incomplete
103	Key does not fit tab	203	Blistered, flaked, sagged, or wrinkled
104	Tab of opening bend insufficient to provide accessibility to key	204	Scratched or scored
105	Improper scoring (band would not be removed in one cont. strip)	205	Fine cracks
	Open Top With Plastic Overcap (when required):		Rust: 1/
106	Plastic overcap missing	206	Rust stain (nonmilitary purchases)
107	Plastic overcap warped (making opening or reapplication difficult)	207	Wet cans (excluding refrigerated containers)
	Rust: 1/		Dent:
108	Rust stain (military purchases)	208	Materially affecting appearance, but not usability
109	Pitted rust		Buckle:
	Dent:	209	Not involving end seam
110	Materially affecting usability	210	Paneled side materially affecting appearance, but not usability
	Buckle:		Frozen Products Only:
111	Extending into the end seam	211	Bulging ends 3/16" to 1/4" beyond lip
112	Collapsed container		Table VIII. Label, Marking, or Code
113	Solder missing when required	201	Loose or improperly applied
114	Cable cut exposing seam	202	Torn or mutilated
115	Improper side seam	203	Text illegible or incomplete
	Frozen Products Only:	204	In wrong location
116	Bulging ends more than ¼" beyond lip		
	Table VIII. Label, Marking, or Code		
101	Not specified method		
102	Missing (when required)		
103	Text illegible or incomplete (military purchases)		
104	Incorrect		

SIGNATURE OF INSPECTOR *H. I. Shelton*   DATE 8/18/86

1/ Rust stain confined to the top or bottom double seam or rust that can be removed with a soft cloth is not scored as a defect.

FORM AD-1027 (8-86)

USE OF RANDOM INSPECTION NUMBERS

I. PURPOSE

The purpose of this section is to explain the use of random number tables when it is desirable to use random numbers to select sample units of any description. Sample units drawn in this manner provide assurance that each unit available for selection has an equal chance of being selected regardless of the quality of the unit or the quality of other units selected from the sample.

II. PROCEDURES

The use of random numbers table is as follows:

1. Determine the desired sample size.

2. Find out what sequence of numbers is in the inspection lot; if it is serially numbered; or if the lot is not numbered, mentally or physically number the units in the lot.

3. Randomly choose the random numbers table on page 26 or 27, (flip a coin, etc.). Determine a starting point in the random numbers table by blindly placing a finger or the eraser end of a pencil in the body of the table. The point that you choose will be in a 6 by 6 block of numbers. Begin in the upper left of that block. Combine into one number as many consecutive digits as would be needed to form the lot size number. That is, for lot sizes of 10 to 99, combine 2 digits into a single sample unit identification number; for lot sizes 100 to 999, use groups of 3 consecutive digits, etc. Proceed to read digits top to bottom down the column from your starting point. When you reach the bottom of a column, continue with the top digit of the next column to the right as if the column were continuous. When you reach the end of one table, proceed to the beginning of the other table. If a sample unit number is repeated, use it only the first time, unless you know in advance that some sample units will be sampled more than once (for example, pallets). If a number exceeds the lot size, disregard it and continue. Record the usable numbers until the needed sample size is reached.

4. For example, assume the lot size is 75. A starting block is chosen blindly from the right hand page (randomly selected ahead of time) as the 4th column block in the 8th row block digits. Suppose a sample size of 10 is needed. Beginning with the upper left of the block, the first two digits form the number 47, reading down the two columns, the next two digits form the number 32, next 40, then 32*, etc., down to 81*. Then proceeding to the top of the page and the next two columns

to the right, we get 01, 01*, 94*, 62, 42, 38, 54, and 66. Those numbers with asterisks are not usable - the 81 and 94, because the lot size is only 75 and the 32 and 01, because they are repeated numbers and were used with their first occurrence.

III. EXAMPLE

A lot of 14,400 primary containers is being examined under normal inspection using a single sampling plan. The lot is palletized and cased - 2,400 cases of 6 No. 10 cans arranged on 50 pallets, each holding 48 cases. The sample size is 315 units (from Table I, U.S. Standards).

In a situation like this, the general procedure for drawing the sample should be as follows: First, the number of cans to be taken from each case should be predetermined. (A desirable, if practical, choice is to examine only one can per case. This procedure spreads the sample more evenly over the lot.) Next, divide the total sample size needed by the number of cans to be taken from each case to obtain the total number of cases to be sampled. Then, if the number of cases is greater than the number of pallets, divide the number of cases needed by the number of pallets to determine the number of cases to be chosen from each pallet. (If the number of cases needed is less than the number of pallets, the pallets to be sampled should be selected by use of the random number table.) Physically or mentally number each pallet beginning with "1". Then, if necessary, select usable numbers from the random numbers table to select the pallets.

Mentally assign the cases on each pallet consecutive numbers beginning with "1", using any logical pattern (for example, top to bottom, left to right). For each pallet, draw the proper quantity of usable numbers from the random numbers table to select the cases on each pallet.

For each case, the preferred method of selecting the predetermined number of cans is to use the table of random numbers. An acceptable alternative method is to mentally group the containers in each case into adjacent sections, each section containing the number of containers to be sampled for each case. Before looking at the containers in the first case, arbitrarily choose one section to inspect. Systematically rotate (clockwise, counterclockwise, etc.) the sections to inspect in each of the remaining cases. This alternative method is described more fully in Case 1 below.

Case 1:

You have decided to take 1/2 of the maximum number of cans from a case permitted by the U.S. Standards, i.e., 3 cans from each case. The selection of a sample size of 315 then proceeds as follows:

1. To determine the total number of cases to examine:

   $\dfrac{315 \text{ (total sample size)}}{3 \text{ (No. of cans from each case)}}$ = 105 (Total number of cases to examine)

   Since the number of cases to be examined is greater than the number of pallets, cases will be drawn from all pallets. This eliminates the necessity of using the table of random numbers to select pallets-- except for selecting pallets from which to draw additional cases after the initial selection of cases from each pallet.
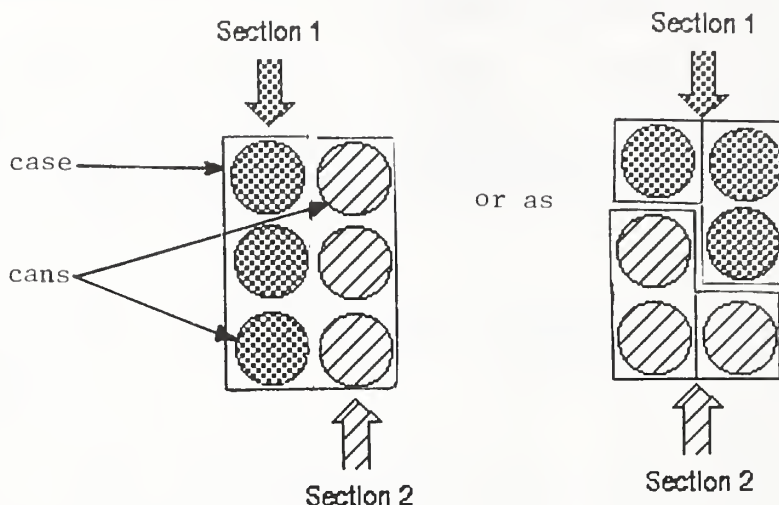
2. To determine the number of cases to be examined per pallet:

   $\dfrac{105 \text{ (Total number of cases to examine)}}{50 \text{ (No. of pallets)}}$ = 2+ (No. of cases per pallet to examine, i.e., 2 cases per pallet + 5 additional cases)

3. Physically or mentally number each pallet from 1 through 50.

4. Mentally assign the 48 cases on each pallet consecutive numbers from 1 through 48 using any logical pattern (for example, top to bottom, left to right, etc.).

5. Mentally assign consecutive numbers from 1 through 6 to the cans in each case.

6. Draw 2 usable numbers (1 through 48) from the random numbers table. These indicate the cases to be drawn from the first pallet. Repeat the process for each of the remaining 49 pallets.

7. Draw 5 usable numbers (1 through 50) from the random numbers table. These 5 numbers indicate the 5 additional pallets from which to select the additional cases.

8. Repeat the case selection procedure in Step 6, drawing 1 number instead of 2, to identify the 5 additional cases needed. (One case from each of the 5 pallets selected in Step 7.) Select another random number if a case number from the original Step 6 is repeated.

9(a) Draw 3 usable numbers (1 through 6) from the random numbers table. These indicate the cans to be drawn from the first case in the sample. Repeat the process for each of the remaining 104 cases.

   Total sample = 50 x 2 x 3 (Steps 3 through + 5 x 3 (Steps 7 through
                                    6 and Step 9)   9) = 315

9(b)   Acceptable alternative method for selection of cans from each case.
Mentally group the 6 cans in each case into 2 adjacent sections of 3
cans each. For example, the cans could be sectioned as follows:

Before looking at the cans in the first case to be examined, you
decide to inspect the cans in Section 1. You then inspect Section 2
in the second case, Section 1 in the third case, and so on, repeating
the cycle until all the predetermined number of cases are examined.

9(c)   As a further example of this method, consider the situation where you
might have cases containing 24 cans each. You decide to look at 6
cans from each of a predetermined number of cases. The sectioning of
the cans could be as follows:

TOP LAYER   BOTTOM LAYER
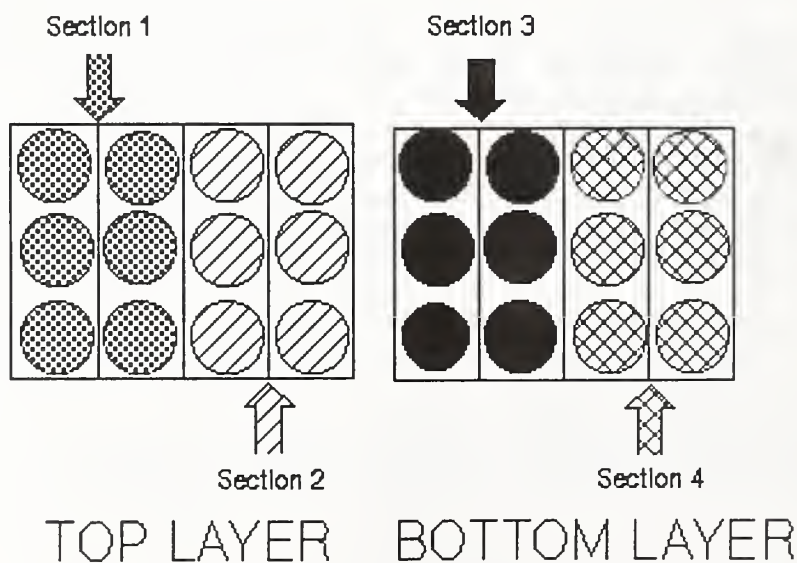
The cycle of section selection from case to case could be as follows:

Case 1	Section 2
Case 2	Section 3
Case 3	Section 4
Case 4	Section 1
Case 5	Section 2
Case 6	Section 3
Case 7	Section 4
Case 8	Section 1
Case 9	Section 2
etc.	etc.

Case 2:

You have decided to take the maximum number of cans from a case as specified in the U.S. Standards, i.e., 6 cans from each case. In this situation, let's say that you have 80 pallets each holding 30 cases instead of 50 pallets each holding 48 cases as in Case 1. The sample size selection of 315 cans is as follows:

1. $\dfrac{315 \text{ (Total sample size)}}{6 \text{ (No. of cans from each case)}} = 52+$ (No. of cases to examine)

   The number of cases to be examined is less than the number of pallets. Therefore, in the following steps, you will use the table of random numbers to select the pallets from which you will draw one case.

2. Physically or mentally number each pallet from 1 to 80.

3. Mentally assign the 30 cases on each pallet consecutive numbers from 1 to 30 using any logical pattern (for example, top to bottom, left to right).

4. In order to get the required 315 cans, you decide to inspect 6 cans from a case from each of 50 different pallets plus 5 cans from a case from each of 3 additional pallets.

5. Draw 1 usable number (1 through 80) from the random numbers table. This number indicates the first of 50 different pallets to be selected. Repeat the process until you have 50 different pallets.

6. Draw 1 usable number (1 through 30) from the random numbers table. This number indicates the case to be draw from the first pallet selected in Step 5 above. Repeat the process for each of the remaining 49 pallets selected in Step 5.

7. Draw 3 usable numbers (1 through 80) from the random numbers table. Select another number if a pallet from Step 5 is repeated. These 3 numbers indicate the 3 additional pallets from which to select a case.

8. Repeat the case selection procedure in Step 6 to identify the 3 additional cases needed (one case from each of the 3 pallets selected in Step 7).

9. Mentally assign consecutive numbers from 1 through 6 to the cans in each case.

10. Draw 1 usable number (1 through 6) from the random numbers table. This number indicates the 1 can in the first case selected in Step 7 <u>not</u> to examine. Repeat the process for each of the other 2 cases.

Total sample = 50 x 6 (Steps 5   +   3 x 5 (Steps 7   = 315 cans
                       through 6)   through 10)

Case 3:

Suppose that in this example only 31 of the 50 pallets are accessible. This circumstance is a restricted sampling situation discussed on page 5 in the section entitled **Drawing Sample**. The number of primary containers under consideration becomes 8,928 (31 pallets x 48 cases per pallet x 6 cans per case) instead of 14,400. The sample size is now 168 units (from Table 1, single sampling plan, U.S. Standards). The procedures for selecting the 168 cans follow those outlined above in Cases 1 and 2, except that now only the 31 accessible pallets are considered instead of the original 50.

The certificate for this lot should contain a statement such as: "Inspection and certificate restricted to pallets labeled 1 through 31." Wording of the restriction statement must be so specific that there can be no misunderstanding as to what portion of the lot was accessible for sampling.

IV. GUIDES

It is realized that physically numbering units in a lot may be impractical; however, practical plans can usually be devised for any particular inspection.

This writeup is intended to present a general approach to the use of random numbers, not to provide a specific solution to each instance where random sampling is required. With this in mind, several guides are given below to increase the likelihood that a sample will fairly represent the lot from which it is drawn. They are:

1. Draw proportional samples.

When the lot consists of more than one code, or is otherwise divided into sublots, which may be more homogeneous within the code or sublot than within the complete lot, select sample units from each code or sublot. The number of sample units selected from each sublot or code should be reasonably proportional to the size of that sublot or total

number of units in that code. The total number of sample units selected for the examination should, of course, equal the size of the required sample.

2. Draw sample units from all parts of each sublot or code in the lot.

3. Draw sample units "blind."

It is important that all units in each code or sublot in the inspection lot have an equal chance of being selected. Application of Guides 2 and 3 will give reasonable assurance that randomness has been obtained. However, the surest way is by use of random methods such as those discussed under II. **PROCEDURES.**

With respect to Guide 3 "drawing blind," the question often arises, "What do I do if I see obviously defective units?" The decision should be made in accordance with these procedures in advance of sampling as to what units are to be selected for the sample. If this is done, then the question of what to do with these obviously defective units is already answered. That is, they are included if they are one of the preselected numbers for the sample and omitted if not.

If possible, the inspector should remove obviously defective units that are noticed and suggest that they be replaced. Once the inspector begins to draw a sample to be inspected, the drawing should be "blind." The inspector should not attempt to draw or avoid drawing defective units.

A word of caution, the "random number" examples given are not the only ways of selecting samples. For example, the use of random numbers for selecting samples from a moving line of filled containers may not be practical or possible, if the containers are not consecutively numbered. Also, computer-generated random numbers are permissible.

V. TABLE OF RANDOM NUMBERS

```
1 1 7 7 6 6    9   6 7 .  1    4 2 5   5 5      1   1 5 2    4 7 1 3 1 2    4 7 9 9 5 7
1 3 6   7 3    7 7 5      5    8 8 2 3 1      9     1 3 6    8   3 6 6 2      2 9 4     5
3 1 4 8 7 2    5   3 9 3 8    5 5 7 3 8 3    2   9 4 4 4        5 5 8 9    6 5 2 1 1 5
6 1 9 8 9 6    8 7 5 8 7 5    9   2 4 7 1    4 5 6 2 3 3    8 6 7 7 8 9    1 1 1 8 9 5
  2 4 6 6 1    2 2 6 6 9 2    6 1 7 2 5      2 3 4 2 1 4    5 3 9 9 6 3    5 5 6 2 5 5
9 6 2 3 6 3      2 5 9 1 2    6 2 4 4 3 4    9 1 3 6 7 5    6 4 5 8 9 2    5 2 3 4 4 6

  5 1 7 6 3    9   1 4 8 7    5   7   8 1      5 5 4 7 8    9 3 8 2 8 7    6   3 7 2 3
3 1 2 6 1 6    4 8 7 6   6    5   6 5 4 6    6 9 6 6 4 7    7 5   7 7 3    8   3 6 5 9
9 1   9 2 6    6 3 2 3 7 7    6 6 7 2 3 1    6 9 9 7 9 5    5 6 3 4 4 4    2 5 4 9 6 8
7   8 7 8 9    4 6 8 8 2 4    5   5 9 9 2    8 9 6 8 9    8 4 4 7 4 6    6 4 1   4 4
9 7 7 5 3 2    8 5 8 1 9 1    8 3 7 7   6    5 2 8   6 3    5 5 1 8 1 4    4 9 3 1 9 8
1 5 4 9 1 5            5 6 3    3 6 1   6    6 4   1 7 3    4 7 4 3 3 2    7 8 2 5 2 5

7 1 2 6 5 9      6 6 7 6    1 4 6 9 2 5    6 6 9 4 2 6    6 9 5 5 8 6    9 9 1 4 1 1
9 7 4 3   6    1 6 2 9 9 6    1 2 6 3 2 6    6 5 6 1 6 6    2 3 7   3 2      9 8   5 5
8 1 5 5 9 1    3 7 5 7 6 3    2 8 2 5 9 9    5 2 1 3 7 9    6 6 4 9 8    7 6 3   1 9
4   6 1 4 5    3 2   9 8 1    1 6 9 4 4 5    8 5 5 5 2    9 9 6 9 7    2 5 6 5 2 4
  6 4 1 1 7    9 9 1   9 7    2 6 5 2 4 7    7 2 4   5    5 1 1   6    7   1   9 3
4 7 9 1 6    6 4   4   7    2 3 8 6   5    6 6 6 1   2    7 5 8 6 7 2    4 9 6 6 4 1

3 6 5 8 4 6    5 2 4 2   5    1 2 1 3 5 8    2 9 6   2 6    7 4 6 7 4 1    6 5 8 8 7 5
7 1 6 1 3 6    7 6 3 1 6 3    6 5 7   5 1    2 3 1 7    9 7   8 3 4    5 6 9 9 1 2
1 7 2 6   6    6 6 3 4 4 6    4 2   7 5 1    9 4 5 8   9    9 5 2 9 2    7 6 8 7 1 6
1 4 7   1 7    1 9 7 6 6 7    6 7 6   5 3    4   7 5   7    3 1 7 6 6 4    5 3 2 3 3 9
7 5 6   5 3    8 9 6 3 5 7    1 2 3 8 4 4    1 7 8 7 6 1      6 1 2 8 4    1 2 6 1 4 1
  5 5 6 9 1    9   7 8 1 4    1 2 7   8 3    2 2 4 6 2 6      6 4 5 4 7    1 1 8 1 8 3

8 8 6 3 9 4    2 8 5 2 7 2    5 6 4 5 6 2    2 5 9 2 9 2      5   2 8 3    5 1 6 3 3 3
1 9 8 5 3 7    1 1 9 9 4 3    1 9 9 7 2 7    6 2 6 6 6 5    3 1 3 2 6      9 5 6 4 2 4
9   9 3 4      4 6 1 5 8 2    2 6 8 8   9    5 6 4 6 8 2    6 6   5 8 9    4 6 5 9 9 1
7 3 4 1 1 4    6 9 5 5 5 1 1    7 1 1 6 7 3    9 3 4 3 5 4    7 4 1 4 4    5 7 7   8 6
8 5 7 7 4 3    3 4 7 7 4 9    3 2 9 9 8 5    7 7 9   5      5 8   3 9 8    9 5 3 1 5 6
1 9 2 9 9 1    7 1 4 3 5 2    3 8 2 3 9 2    3 3 1 6 2 8    5 1 4 7 1 9    3 9 6   8 6

6 7 6 3   1    1 6 9   2 7    3 4 8 3 1 8    9 6 6 4 4 6    3 4 9 9 5 7    2 1 9 4 5 5
5 1   3 6 6    2 6 8 1 7 5    9 1 6 2 9 9    1 2 9 3 4 1    6 2 3 2   9    9 7 2 1 8
5 7 6 6   1    1 5 3 9 4 6    5 3 1 3 7 1    1 9 3   2 1    1 5 3   6 8    8 6 2 9 7 7
5 3 1 8 5 4    2   1   5 1    6 2 4 3 1 3    1 9 7 6 1 8    5   7 1 2 7    6 8 7 5 2 4
3 1 3 4 5 2    8 4 7 6 3 7    4 3 3 2 6 7      2 9 6 4 7    3   6 9 4 2    4 3 3 7 7 8
9 3 5 6 9 3    2 4 6 7   4      7 2 7   1    3 1 4 7 1 5    9 9   1 1 9    5 9 9 2 4 2

2 2   2 6 3    9 2 3 1 3 1    1 1 3 8 4 1    5   1 7 4        3 3 9   4    4 4 8 1 2 9
1 8 2 1 9 9    5 5 9   8 7    4 7 3 2 5 3    4 3 7 4 4      9 9 3 2 1 3    8 1 4 4 1 2
  2 8 1 7 3    3 6 7 2 3 6    2 7 8 1 7 9    6 2 3 9 7 5    6 4 1 9 5 3    2 7 4 8 4 4
3 8 6   6 1    4 5 8 1 6 1    3 3 5 9 9 4    3 3 4 5 8 3    6 7 7 6 8 4    5 6 2 4 5 5
5 2 3 6 5 9    2 2 3       3    7 5 1 7 1 6    4 7 9 2 9 3    9 6 7   9 9    2 1 8 4 3 5
1 8 5 7 2 5    2 9 4 6 6 4    1 3 9 4 7 2    9 1 5 5 6 6    8 3 6 6 8 1    5 4 1 9 2 2

4 4 3 5 4 9    1 8 4 4 5      1 2 9 1 1 6    4 7 8 5 4 5    5 2 9 2 6 1    5 7 8 7 4 4
8   3 6 2 9    6 1 2 4 7 2    5 4 8 7 6 3    3 2 1 2 7 3    8 8 8 2 4 5    5 7 8 7 1 5
2 6 8 5 7 1    2 6 9 3 4 2    3 3 2 1 4 9    4 1 4 2 8 3    5 3 1 6 2 1    1 2 3 9 4 3
5 9 1 4 8 2    1 9 1 1 8 5    5 5 9 8 1 6    3 2 8 1 5 5    8 7 3 1 7 1    1 7 3 6 3 8
1 6 2 1 4 3    8 7 7 4 1 3    7 1 5 8 1 1    1 2 4 7 7 1    7 1 3 1 1 7    3 7 1 5 8 1
7 7 1 4 4 8    1 1 4 8 9 1    5 1 2 9 6 3    8 1 5   6 7    1 7 3 7 2 6    1 5 9 6 6 7
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V. TABLE OF RANDOM NUMBERS (Cont'd)

```
3 3 0 7 7 .    2 9 . 3 1 4    1 4 3 6 8 8    4 4 3 5 2 2    3 . . . 1 2    7 6   5 9
6 5 1 . 4 4    . 3 4 6 4 6    3 4 6 4 8 .    . 2 . 9 3 8    3 4   2 2 0    4 3 9     7
6 5 9 3 5 4    . 8 3 8 9 5    3 9 2 2 8 1    2 3 7   5 5    1 1 5 3 7 8    7 1 6 6 6 2
6 3 3 8 4 4    7 3 8 2 8      3 4 6 3 7 .    0 1   6 4 8    6 9 5 1 1 8    3 1 1 3 6 2
3 1 . 9 6 8    4 8 7 5 3 6    3 9 3 . 9 4    5   5 3 6 .    2 2 6 4 6 4    4 8 2 4 7 4
1 1 3 0 3 5    6 1 3 5 . 7    4 2 5 4 6 2    1 5 7 4   0    2 2 5 7 7 4    2 1 4 8 6

8 5 1 5 3 .    2 . 7   0 5    3 7 3 3 7 4    2 7 3 4 3 0    0 0 6 5 3 6    2 8 5 . 1 0
1 5 . 5 6 8    1 7   8 7 5    4 8 7 7 5 7    7 4 7 8 1 0    7 4 3 1 8 3    5 3 9 8   4
7 2 6 1 7 7    4 3 7 1 0 5    5 9 6 5 3      . 7 . 5 3 9    2 6 0 2 6 5    8 7 0 7 7
6 7 9   1 2    8 1 2 1 7 4    2 0     5 4    3 5 4 3 8 8    9 3 2 1 5 9    5 6 5 4 7 4
4 6 4 8 7 2    5 5 7 4 3 5    4 7 6 3 1 7    3 5 2 0 1 1    4 8 4     5    8 7   0 4 .
6 . 2 1 1 2    5 8 7 9 8 7    5     5 3 4    0 . . 1 8 5    8 6 3 0 6 1    6 3 9 3 9 5

3 7 6 1 5 .    2 6 3 4 4 6    2   7 1 5 2    7 3 6 6 6 8    0 4 3 4 1 1    2 5 4 4 . 4
7 3 5 6 3 2    1 5 . . 5      1 4 2 2 7 4    0 1 6 3 5 4    6 . . 7 1 8    2 7 1 0 4 7
2 . 4 3 5 4    1 2 5 6 5 4    5 2 8 8 6 3    3 5 6 2 6 4    6 8 8 1 6 2    8 2 4   1 1
. . . 5 5 7    5 2 6 1 7 8    1 8 2 8 2 1    6 0 2 6 0 3    5 4 2 2 3 5    2 1 8   4 8
. . 0 4   9    0 5 3 1 6      . 1 6 . 4 1    0 5 3 3 7 4    4 6 3 1       4 8   1 2 1
1 1 4 9 1 9    3 3 0 5 4 2    2 9 1 1 2 4    5   7 . . 1    2 . 4 5 8 4    7 6 6 3 1 8

3 7 0 6 . 2    6 6   3 5 .    7 8 . 6 2 8    1 3 7 9 7 .      4 7 9 4 3    7 5   6 2 2
3 3 . 2 4 .    9 9 1 7 1 3    4 2 2 2 8 4    . 1 5 1 4 7    1 6 5 3   6    . 1 7 4 8 0
2 2 . 5 8 8    8 4 8 4 . 5    1 7 1 7 7 8    4 7 6 7 0 2    5 8 4 0 5 4    3 5 6 7 5 4
. 4 0 9 8 9    5 5 3 2 1 2    4 4 9 2 7 9    7 4 2 6 3 9    6 6 1 4 3 0    4 6     8 8
3 7 9 7 . .    4 6 7 8 . 8    7   7 3 2 3    3     8 6 0    8 3 5 4 7 1    3 1 2 7 2 0
1 5 5 0 3 0    2 2 4 0 2 8    4 5 3 6 7 6    1 8 8 . 4 .    5 5 6 0 5 6    2 2   7 2 0

. 1 7 8   7    7   6 1 6 4    7 6 1 2 2 5    6 6 5 1 2 3    0 8 7 7 6 6    7 8 1 8 1 0
5 5 3 4 2 7    1 8 4 4 5 7    5 2 4 4 7 .    3 5 3 0 2 6    0 1 6 3 0 5    5   0 3 2
. 1 6 1 6 8    7 5 5   5 1    3 8 4 5 4 6    3 7 2 7 6 5    0 2 6 3 5 7    8 6 2 3 7 8
6 5 1 5 2 4    7 3 1 3 7 1    8 3 3 . 5 3    6 . 5 4 0 7    5 5 4 . 6 3    5 4 9 2 7
2 . 4 9 1 7    7 3 4 1 6 8    6 4 1 8 7 6    2 8   8 8 8    4 3 5 3 3 2    6 7 4   2 1
1 5 1 4 9 3    0 3 1 3 4 6    . 5 6 2 2 2    5 6 5 8 2 1      8 7 2 7 7    2   4 0 5 6

9 . 8 7 2 8    0 1 1 7 0 5    8 5 7   0 2    6 1 1 . 4 2    9 3 7 6 5 5    3 5 1 4 5 5
. 4 1 7 7 6    4 6 6 1 0 .    1 2 0 3 2 4    6 7 6 8   4    5 2 7 1 0 7    2 0 2 2 . 2
1 3 8 . 3 0    8 1 4 6 5 8    7 5 9 6 6 2    3 8 3 7 3 3    6 6 2 6   0    7 0 0 6 . 7
3 2 9 . 7 1    6 6 4 2 1 8    6   6 2 4 3    7 2 7 3 4 4    7 4 0 8 1 3    8 0 5 0 5 8
4 . 6 4 7 3    4 3 0 0 0 8    . 3 2 3 8 2    3 3 8 0 7 8    6 6 4 0 2 2    3 4   6 4 5
5 4 6 2 3 1    8 4 9 0 1 0    5 7 6 3 7 7    8 1 . 2 4 1    6 5 5 6 3    5   0 1 5

3 7 8 8 6 6    0 . . 3 4 .    5 5 5 9 2 5    3 1 3 1 4 .    5 8 6 9 0 .    6     5 5 5
. 1 3 8 9 3    1 3 . 7 8 3    7 2 5 1 2 3    7 . 5 1 3 4    3 1 8 5 2 5    5 4 7   1
4 5 2 2 5 1    3 7 3 4 3 1    1 0 5 6 6 7    6 4 4 . 6 1    2 6 8 2 2 2    3 7 7 2 0 3
3 6 2 6 6 2    3 3 . 3 7 0    0 3 . 3 2 4    2 7 5 9 7 1    7 6 6   1      8 6 2   8 6
6 2 6 3 6 4    1 0 7 6 3 8    6 5 7 0 7 2    8 6 4 0 7 8    2 3 1 2 1 5    0 4 7   0 8
1 8 3 7 . 1    1 9 0 8 3 6    4   0 7 0 2    3 3 3 2 5 3    6 3 1 0 4 0    7 2 4 1 0 5

  9 8   4 6    6 5 5 4 1 6    4 6 0 7 2 1    0 7 7 7 3      4 6 3 2 5 0    2 3 1 2 8 4
1 1 0 . 4 1    5 5 .   8 8    0 0 0 5 6 .    2 1 0 6 5 4    2 2 1 0 7      2 5 8 7 6
5 1 7 1 4 3    3 8 6 5 . 5    5 7 5 3 2 7    0 6 3 1 5 0    0 1 8 0 7 7    3   4 4 6 0
6 6 1 3 6 6    3 4 3 5 1 0    5 0 5 8 2 2    8 5 6 8 1 0    1 6 6 5 6 1    0 6 8   8 0
7 1 0 9 3 3    7 1 4 8 4 2      8 2 9 2 9    5 0 5 4 2 1    5 8 7 1 0 2    . 6 0 8 7 0
    6 8 4 7    6 6 0 3 6      7 7 0 2 2 2    6 6 5 2   4    3 7 3 0 8 2    2   5 7 6 8
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